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(56) Documents Cited
GB 1572177 A US 588610 A US 3887031 A
US 3834487 A

(58) Field of Search
UK CL (Edition 8) E1D DF116
INT CL⁷ E04B 1/82 1/84 1/88
WPL EPODOC, JAPIO

(54) Abstract Title
Sound reduction device within a soundproof wall

(57) A sound reduction device within a soundproof wall has a plurality of tapered or straight large and/or small sound absorbing barrels 11, 12 spaced by an equal distance that are installed in a rectangular frame 10. A panel 15 with a plurality of small tapered holes 16 covers the frame 10 and guides the sound waves into the sound absorbing barrels 11, 12.

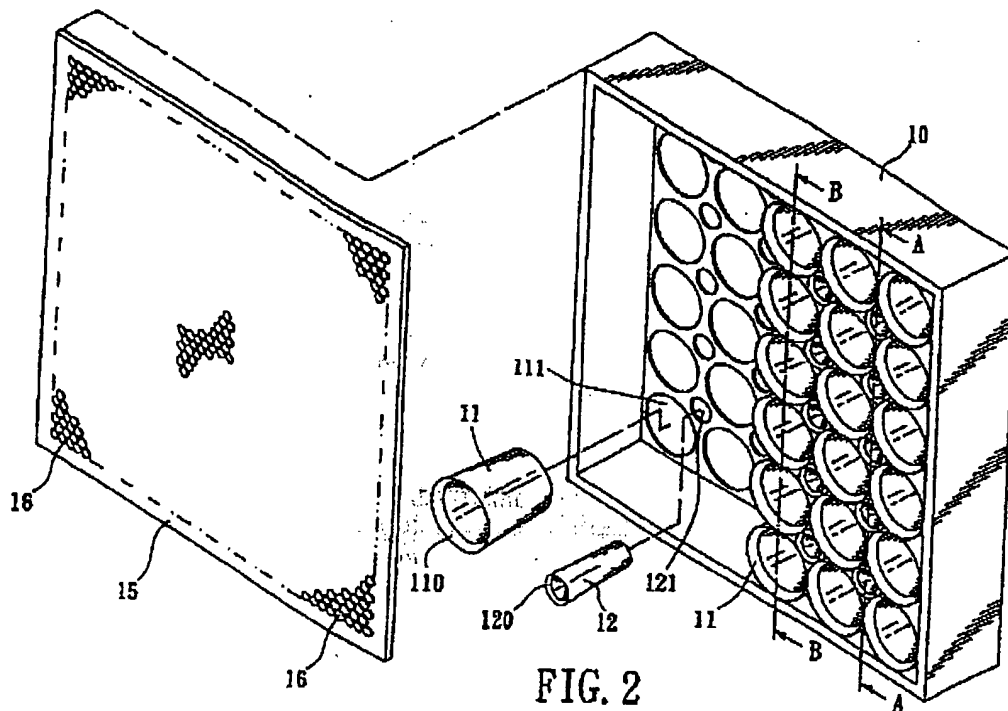


FIG. 2

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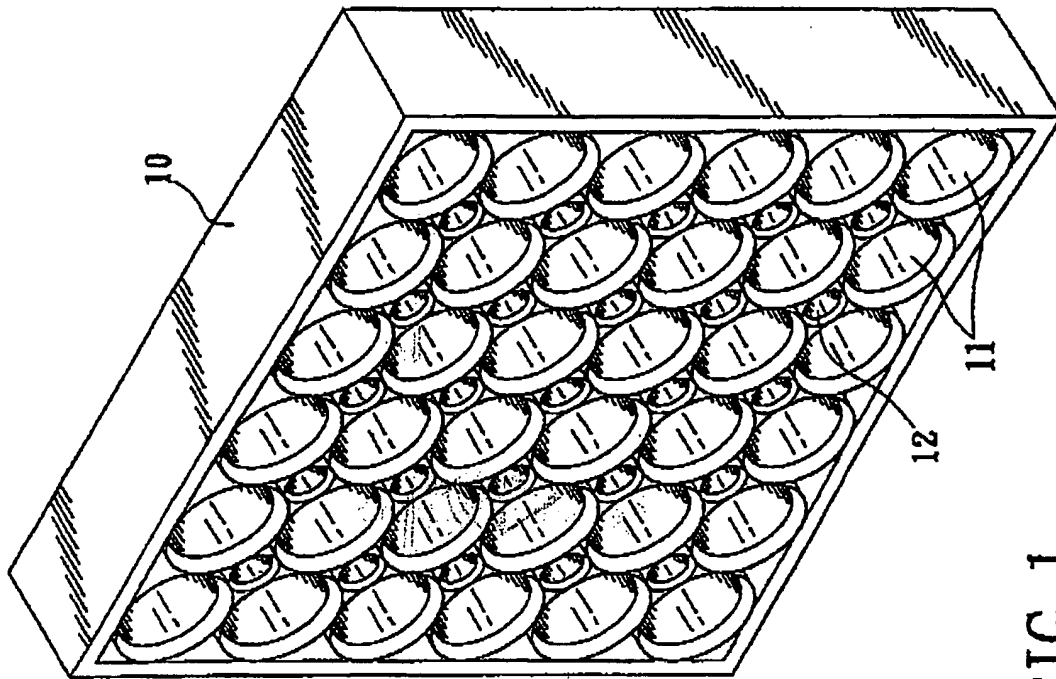
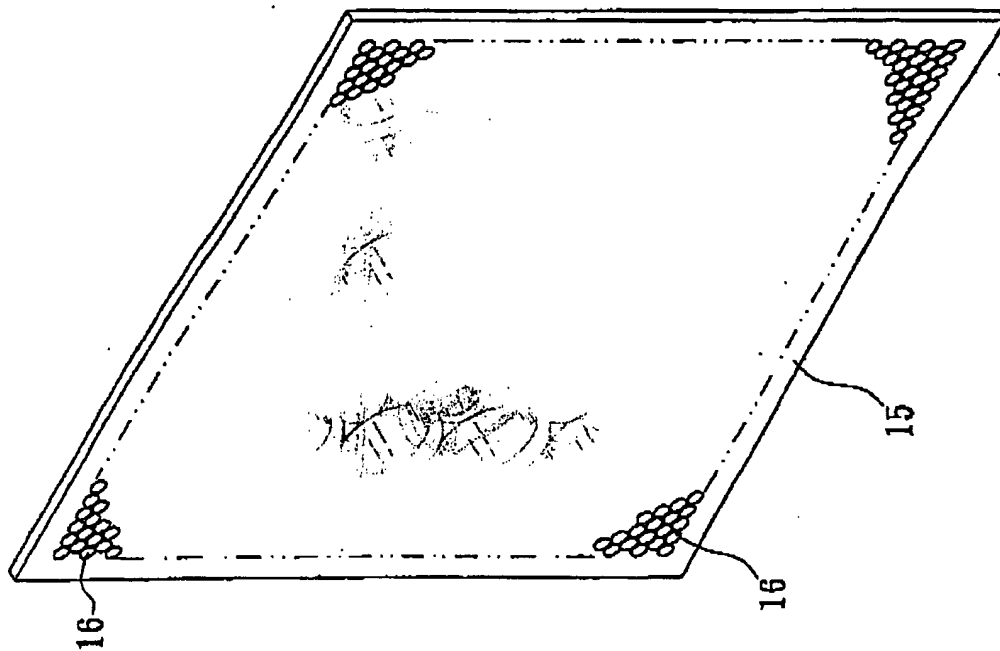
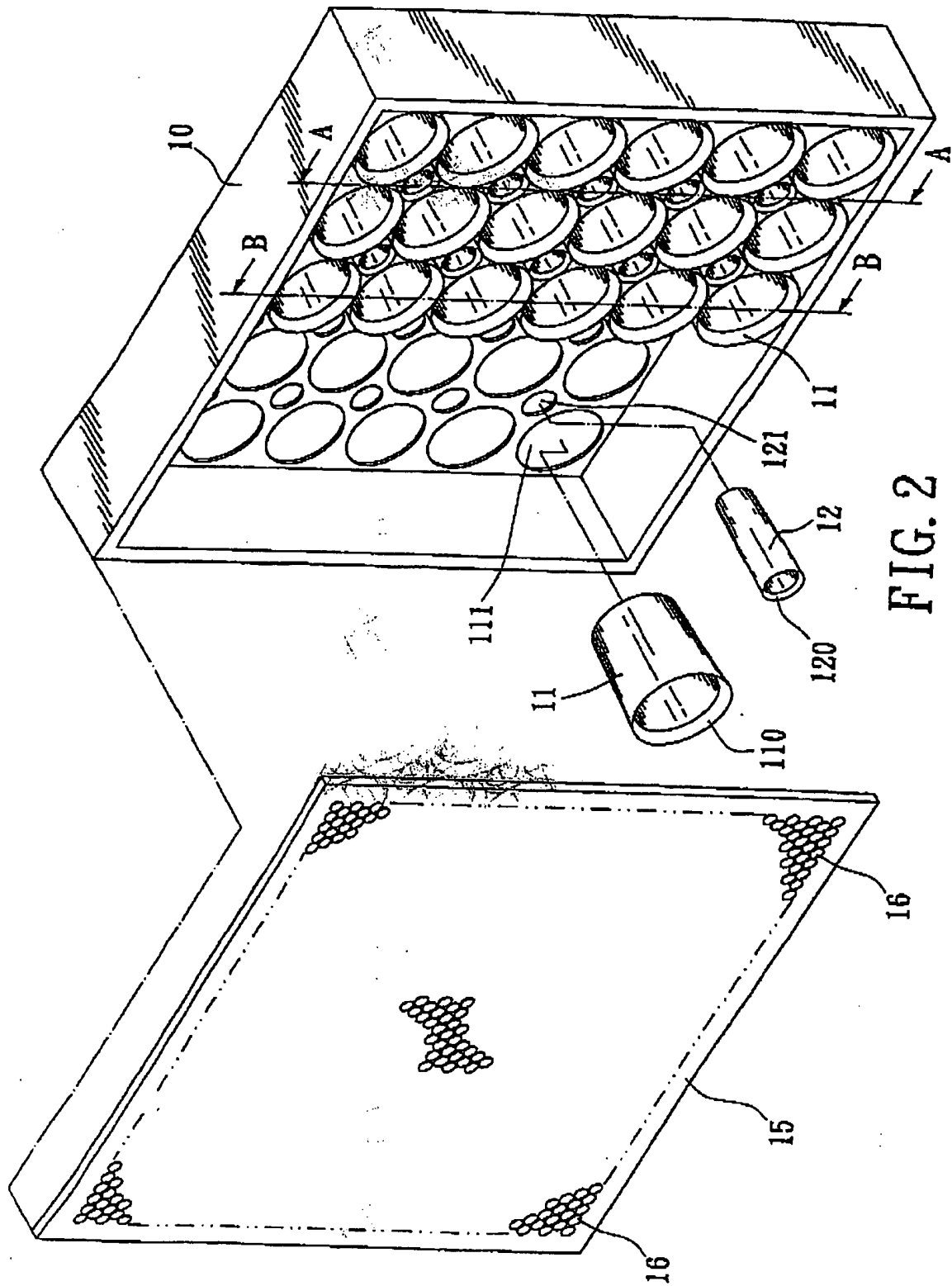


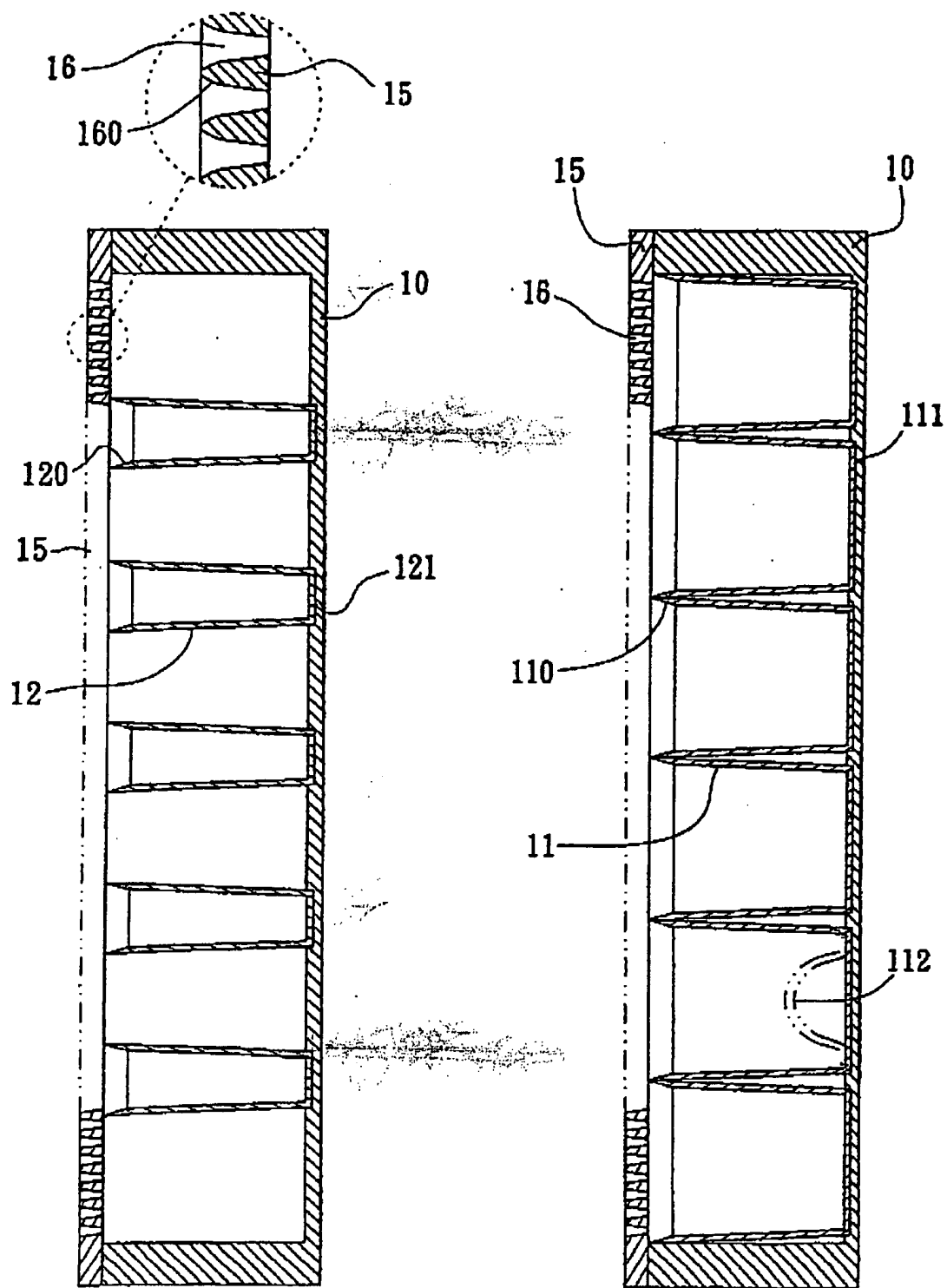
FIG. 1



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A-A
FIG. 3B-B
FIG. 4

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A SOUND REDUCTION DEVICE WITH A SOUNDPROOF WALL

FIELD OF THE INVENTION

5 The present invention relates to a sound reduction device with a soundproof wall. A plurality of tapered or straight large or small sound absorbing barrels spaced in equal distance are installed in a rectangular frames, and a panel with a plurality of small tapered holes cover thereon for guiding sound waves into
10 the sound absorbing barrels to be surrounded therewithin. Thus, finally, the sound is reduced.

BACKGROUND OF THE INVENTION

 In Taiwan Patent Publication No. 292659 (Application No.
15 85206689), " Fireproof and Soundproof Wall," a soundproof device is disclosed. The device disclosed in the prior art is formed by in frame 40 with two symmetric sound absorbing boxes 10 and 20 clamping a soundproof plate 30. The soundproof plate 30 is formed by two symmetric cell type lines 31 and 32 to clamp a
20 soundproof plate 33. The sound absorbing barrel boxes 10 and 20 are formed by fireproof cloth 11 and punching hole 12. The fireproof cloth 11 is formed by fireproof fiber 111 and foil 112 with punching holes. The periphery of the foil 112 with punching
25 holes is coated with glue 112. By aforesaid structure, a soundproof plate is formed.

SUMMARY OF THE INVENTION

The primary object of the present invention is to provide a
5 sound reduction device with a soundproof wall. A plurality of
tapered or straight large or small sound absorbing barrels spaced
in equal distance are installed in a rectangular frames. As sound
is transferred into the sound absorbing barrel, it can surround in
the sound absorbing barrel and thus is deleted.

10 Another object of the present invention is to provide a sound
reduction device with a soundproof wall. A panel with a plurality
of small tapered holes cover thereon for guiding sound waves into
the sound absorbing barrels to be surrounded therewithin. Thus,
finally, the sound is reduced.

15 The various objects and advantages of the present invention
will be more readily understood from the following detailed
description when read in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

20 Fig. 1 is a perspective view of the present invention.

Fig. 2 is an exploded perspective view of the present
invention.

Fig. 3 is a cross sectional view of the present invention along
cross section of A-A.

25 Fig. 4 is a cross sectional view of the present invention along

cross section of B-B. ~~Fig. 1~~

**DETAILED DESCRIPTION OF THE PREFERRED
EMBODIMENTS**

5 With reference to Figs. 1 and 2, in the present invention, a plurality of large and small sound absorbing barrels 11 and 12, respectively, having cup shapes with two different sizes and spaced with an equal length are installed in a rectangular frame 10. The sound absorbing barrels 11 and 12 may have any cambered
10 shapes. Moreover, at the inner rims at the top sides of the sound absorbing barrels 11 and 12, chamfered portions 110 and 120 are formed so that the sound waves of noises may be further guided into the barrels. ~~Fig. 1~~

Moreover, a panel 15 covers on the top of the sound absorbing
15 barrels 11 and 12. The panel 15 is formed with a plurality of tapered small through holes 16 spaced with equal distances as shown in Figs. 3 and 4. The surface panel 15 has a plurality of small through holes 16 therein. The top of each tapered hole 16 has a chamfered portion 160 for guiding noises into the sound
20 absorbing barrels 11 and 12. Once the sound waves of noises flow into the sound absorbing barrels 11 and 12, since the sound absorbing barrels have a cylindrical cup shape (or cambered geometrical shape). Thus, sound wave will flow therein and then is exhausted gradually. Thus, the expected sound cancelled
25 function is achieved. ~~Fig. 1~~

Furthermore, as the dashed line shown in Fig. 4, the sound absorbing barrel 11 may has a cambered smooth convex bottom 112 for increasing the surrounding effect of the sound in the sound absorbing barrel.

5 In summary, in the present invention, by a plurality of large and small sound absorbing barrels 11 and 12 in a rectangular frame 10 and a plurality of small tapered holes 16 in the panel 15, thus the sound is surrounded effectively so as to be deleted. The present invention is not confined by materials, such as plastics,
10 metal, concrete, compound material, etc. Moreover, the present invention has a simple structure suitable to be used commercially.

Although the present invention has been described with reference to the preferred embodiments, it will be understood that the invention is not limited to the details described thereof.
15 Various substitutions and modifications have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A sound reduction device with a soundproof wall, wherein a plurality of tapered or straight large or small sound absorbing barrels spaced by an equal distance are installed in a rectangular frame, and a panel with a plurality of small tapered holes covers thereon for guiding sound waves into the sound absorbing barrels to be surrounded therewithin, thus, finally, the sound is reduced.
2. The sound reduction device with a soundproof wall as claimed in claim 1, wherein the inner rim at the top of each sound absorbing barrel is chamfered for increasing the effect of guiding sound wave.
3. The sound reduction device with a soundproof wall as claimed in claim 1, wherein the top of the plurality of small tapered holes formed on the panel is chamfered so that sound waves can be smoothly guided.
4. The sound reduction device with a soundproof wall as claimed in claim 1, wherein each sound absorbing barrel has a cambered geometrical shape.
5. The sound reduction device with a soundproof wall as claimed in claim 1, wherein each sound absorbing barrel has a cambered smooth convex bottom.
6. A sound reduction device with a soundproof wall substantially as hereinbefore described with reference to, and as illustrated in the accompanying drawings.



Application No: GB 0010197.2
 Claims searched: 1 to 6

Examiner: Guy Robinson
 Date of search: 30 January 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): E1D DF116

Int Cl (Ed.7): E04B 1/28, 1/84, 1/86

Other: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 1572177 (HAWORTH.)	-
A	US 5888610 A (AEROSPATIALE.)	-
A	US 3887031 A (LOCKHEAD.)	-
A	US 3834487 A (HALE)	-

X	Document indicating lack of novelty or inventive step.	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	B	Patent document published on or after, but with priority date earlier than, the filing date of this application.